

IN THE CLAIMS

Please amend claims 1, 2, 3, 11 and 12 as follows:

1. (CURRENTLY AMENDED) An open loop controller for a sampled grating distributed Bragg reflector (SGDBR) laser, comprising:
 - a look up table of current settings stored in the controller, each entry in the table corresponding to an optical power and wavelength ~~separate operating point~~ of the SGDBR laser, each entry in the look up table comprising:
 - a first mirror current setting for a first mirror section of the SGDBR laser;
 - a second mirror current setting for a second mirror section of the SGDBR laser;
 - a phase current setting for a phase section of the SGDBR laser; and
 - a gain current setting for a gain section of the SGDBR laser,
 - the first mirror current setting, second mirror current setting, phase current setting, and gain current setting controlling at least one of a group comprising an optical output power and an output wavelength of the SGDBR laser; and
 - ~~wherein when the controller is a processor given a selected optical power and output wavelength, the controller selects said processor selecting an entry from the look up table and applying the first mirror current setting, the second mirror current setting, the phase current setting and the gain current setting to current sources coupled respectively to the first mirror section, second mirror section, the phase section and the gain section of the SGDBR laser to control the laser at substantially the~~ selected optical power and output wavelength;
 - wherein the SGDBR laser comprises a cavity including the phase section and the gain section and bounded by the first mirror section and the second mirror section.
2. (CURRENTLY AMENDED) The controller of claim 1, further comprising a temperature regulator sensing and controlling a temperature of the SGDBR laser by monitoring a temperature sensor of the SGDBR laser and adjusting the current to a thermoelectric cooler.
3. (PREVIOUSLY AMENDED) The controller of claim 2, wherein the temperature regulator regulates the temperature of the SGDBR laser to a fixed, pre-selected temperature.

4. (CURRENTLY AMENDED) The controller of claim 1, wherein the look up table ~~is filled with~~ comprises unique values for each a specific SGDBR laser being controlled.
5. (PREVIOUSLY AMENDED) The controller of claim 4, wherein the unique values of the look up table are determined using a calibration routine.
6. (PREVIOUSLY AMENDED) The controller of claim 1 wherein each entry in the look up table further comprises an optical amplifier current setting.
7. (PREVIOUSLY ADDED) The controller of claim 6 wherein the optical output power is adjusted by the optical amplifier current setting.
8. (PREVIOUSLY ADDED) The controller of claim 5, wherein the calibration routine comprises an incremental calibration routine where the SGDBR laser is stepped and locked to each channel using a calibrated wavelength locker as a reference.
9. (PREVIOUSLY ADDED) The controller of claim 5, wherein the calibration routine comprises a mirror reflectivity peak calibration routine where reflectivity peaks of the first mirror and the second mirror are determined, mirror tuning efficiency curves are generated from the reflectivity peaks and the first mirror current setting and the second mirror current setting for each entry in the look up table are determined from the mirror tuning efficiency curves.
10. (PREVIOUSLY ADDED) The controller of claim 9, wherein minima of a gain voltage measurement of the SGDBR laser is used to determine the reflectivity peaks.
11. (CURRENTLY AMENDED) The controller of claim 1, ~~further comprising wherein the~~ processor comprises a digital signal processor (DSP) for applying the current settings of the lookup table to operate the SGDBR laser.

12. (CURRENTLY AMENDED) The controller of claim 11, ~~further comprising~~ wherein the current sources comprise a current source for each of the current settings, ~~the~~ each current source including a digital to analog converter (DAC) coupled to a voltage to current amplifier (VI) where each current source is coupled to the DSP for applying the current settings of the lookup table to operate the SGDBR laser.
13. (PREVIOUSLY ADDED) The controller of claim 12, further comprising a programmable logic device (PLD) providing an interface between the DSP and each current source.
14. (PREVIOUSLY ADDED) The controller of claim 12, wherein the voltage to current amplifier comprises a modified Howland circuit.
15. (PREVIOUSLY ADDED) The controller of claim 14, wherein the voltage to current amplifier further comprises a current mirror added to an amplifier output of the modified Howland circuit.
16. (PREVIOUSLY ADDED) The controller of claim 15, wherein the voltage to current amplifier further comprises a filter to reduce noise.